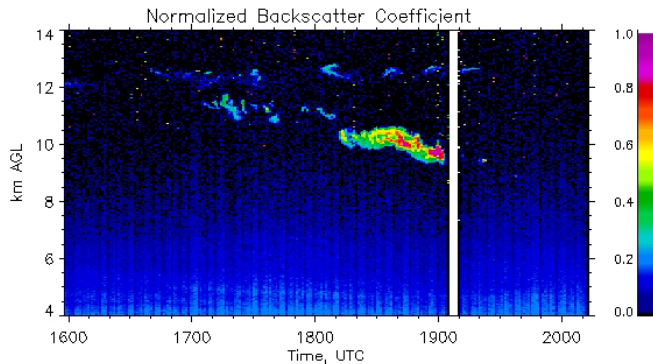


Flight Summary: WB-57F MidCiX – 3 May 2004



Cirrus observed over the ARM site during the flight (top) and by the Raman Lidar looking vertically from the ground (Lidar image created by Jennifer Comstock, PNNL).

Purpose of Mission: Sample cirrus over the ARM site.

General Information

Flight date – 3 May 2004

Flight description – Flight #7, MidCiX mission

Flight duration – 6.4 hours

Crew – Steve Feaster and Brian Barnett

Flight Summary

The WB57 successfully sampled a thin cirrus over and near the ARM SGP site that moved over the central Plains in a northerly flow.

Flight Profile

- We took off and climbed up to FL 495, not penetrating any clouds on the way up.
- Just north of Dallas, there was a very thin sheet of cirrus well below us that had a very defined edge where it began. We were over the edge at 15:58. It was optically very thin, and if I hadn't been able to see the edge, I would have thought it was just a hazy day.
- We opted to stay at FL 495 so wouldn't interfere with DFW traffic and potentially get vectored away from ARM Site. We were working with ATC to get lower, but flew over the ARM Site at 16:25, FL 495.
- At 16:35, we descended down to FL 410, and penetrated a very thin cirrus layer at 16:41:15. We were over the ARM Site at FL 410 in cloud at 16:42, flying westbound. Over the ARM Site, we made a turn to the north to start north/south tracks over the Site.
- We ran out of the cloud at 16:51, and turned

south, descending down to FL 410. We were getting very low CAPS counts intermittently, but then were getting good counts over the ARM Site, and to the south. We had laid down a thick contrail on our northbound leg that was just off to the right of the airplane. Several other contrails were visible around us, especially at 17:06:20.

- At 17:07:55, we turned back to the north and descended to FL 395.
- We intercepted our own contrail at 17:13:45. We flew to the ARM Site, and then proceeded to the northwest on a heading of 290 at 17:20:00. We climbed up to FL 410.
- On this leg, we started out in clear air, but by 17:30, we were getting counts. About the last 15 miles of this northwest track, we were over-flying a thick cirrus layer. The ground was barely visible.
- We did a 180 turn to the southeast at 17:43 and climbed to FL 422. There wasn't any cloud there, so we descended down to FL 415 to get in cloud. There was a good mix of visible and sub-visible cirrus on this leg, and at 18:02:45, we were back over the ARM Site.
- Over the Site, we turned to the south and climbed up to FL 417 and back down to FL 390 searching mostly unsuccessfully for clouds. At 18:14, we turned to the north. At 18:29:10, we climbed back up to FL 410 and got in a cirrus cloud 5 miles north of the ARM Site. The Site then radioed up to us that they were seeing the lower cirrus layer at FL 339. We turned back to the south at 18:34.
- By 18:37, ATC cleared us down to FL 330 – FL 350. We got in a very good cloud layer at 18:40, 10 miles to the south of the ARM Site at FL 345, but we came out of the cloud very quickly.
- We turned back to the north about 30 miles south of the ARM Site at 18:45:05, and dropped down to FL 340.

- We started picking up clouds at FL 339, 18:48:55, 19 miles south of ARM Site, with no other clouds below us.
- About 8 miles north of ARM Site, at 18:55:35, we turned back to the south and descended to FL 335. We were immediately in the good cloud layer again. A 45 deg halo was seen without a 22 deg halo for the first time in this mission at 19:01.
- We turned back to the north at 19:03:55, descending to FL 330. We got back in the clouds, and came out again 10 miles south of the ARM Site.
- We turned back to the south at 19:17:50, and were out of the clouds for a while because ATC would not let us turn, and forced us to go several miles north of the ARM Site. Once we turned, we climbed up to FL 345 at 19:25:10 to prepare for a spiral down.
- At 19:27:15, 23 miles south of the ARM Site, we started a spiral down, but the good cloud that we had been working had dissipated almost to extinction. All that was left was the very thin cirrus layer.
- We entered the cirrus layer at about FL 320, and ATC wouldn't let us go any lower than FL 310. We were at the bottom of the spiral at 19:31:41, still in the cloud. We started a spiral back up at 19:31:45 and were out of the clouds at FL 335. We elongated one side of the spiral to stay in cloud up to that altitude.
- We then started back down to the work the base of the cloud at 19:35:15.
- At FL 310, 19:38:45, we turned to the north toward the ARM Site, getting good counts initially, then tapered off rather quickly. There wasn't much cloud around us at this point, but the most promising region looked over the west of us (west of ARM Site), so we headed that way.
- Still at FL 310 at 19:51:45, we got back in cloud, where the tops were very wispy w some fall-streaks around. A 22 deg halo was visible.
- At 19:54:40, we turned back to intercept the cloud, climbing to FL 315. This cloud that we were working was pretty small, only about 20 miles wide. We maneuvered however ATC would allow us to work this cloud, there wasn't much of a pattern.
- At 20:08:15, we were at FL 320, in the very tops of the cloud.
- At 20:12, we RTB'd and climbed up to FL 490.
- At about FL 100 during the descent, we experienced moderate turbulence.

Flight Log

Take off	1509 UTC	Landing	2153 UTC
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Instrument Failures/Notes/Times

- MMS calibrations not completed. We forgot until too late.
- MMS Box: Not conducted
- MMS Pitch: Not conducted
- MMS Yaw: Not conducted
- CAPS recycles: OFF – 16:54:15, ON – 16:54:25, OFF – 18:52:05, ON – 18:52:18
- Landing gear up right after takeoff. Gear down and spoilers open at 21:01:44. Gear up and spoilers closed at 21:07:14. Spoilers out 21:16:00. Gear down at 21:30:05.

Instruments flown: Full Compliment

Preliminary Instrument Notes:

Appears Good: JLH, CSI, CPI, NEV, SPP, Harvard TW, Harvard WV, CLH, CIN, VIPS, PIP/2DP
Problems: CAPS (no data recorded), MMS (some noise).

Nav Data Information

- Nav data is uploaded to the MidCix website.

Compiled by Brian Barnett, Jay Mace